CLAIM AMENDMENTS

Please amend the claims as follows (with strikethrough indicating deletions and underlying indicating additions to the claims):

What is claimed is:

1. Cancelled.

2. (Previously presented)The method of claim 22, further comprising filtering the horizontal signal for reducing background noise and respiratory artifact and other body movements in accordance with predefined signal frequency band values.

3. (Previously presented) The method of claim 22, further comprising identifying the respiration rate.

4. (Previously presented) The method of claim 22, further comprising calculating a sum signal comprising a sum of the two vertical pressure signals and filtering and analyzing the calculated sum signal in combination with the horizontal pressure signal for identifying and detecting the heartbeat rate and respiration rate.

5. (Previously presented) The method of claim 22, further comprising:

sensing using a plurality of pressure sensors located beneath the subject at different locations, a plurality of vertical pressure signals exhibiting variations over time of vertical pressure applied by the subject on each location;

subtracting at least one vertical pressure signal from another vertical pressure signal thereby creating a plurality of horizontal signal exhibiting horizontal mass movements over time attributed to the subject's blood circulation;

selecting the horizontal signal having the largest integral value of all horizontal signals, wherein the identification and detection of the heartbeat rate is based on said selected horizontal signal.

6. (Previously presented) The method of claim 22, further comprising calibration for calculating the pre-defined filter signal frequency band values, wherein calibration is based on the FFT algorithm.

7. (Previously presented) The method of claim 2 wherein the filtering is achieved by using a high pass filter, wherein the cut off frequency is twice as a pre-defined heartbeat rate.

8. (Previously presented) The method of claim 2 wherein the analyzing includes identifying peak values of the filtered signal.

9. (Previously presented) The method of claim 22, wherein at least one sensor is located beneath the lower part of the subject's body and at least one sensor is located beneath the upper part of the subject's body.

10. (Previously presented) The method of claim 22, wherein the horizontal signal represents the horizontal movements of the subject and the analyzing includes detection of blood circulation.

11. Cancelled

12. (Previously presented) The system of claim 11 further comprising a filtering module for reducing background noise of the horizontal signal in accordance with pre-defined signal frequency band values.

13. (Previously presented) The system of claim 11 wherein the processing module further identifies the respiration rate.

14. (Previously presented) The system of claim 11 wherein the electronic mechanism further calculates the sum signal of at least two vertical signals and the processing module further analyzes the calculated sum signal in combination with the horizontal signal for identifying and detecting the heartbeat rate and respiration rate.

15. (Previously presented) The system of claim 11 wherein the electronic mechanism further selects the horizontal signal having the largest integral value of all horizontal signals , wherein the identification and detection of the heartbeat rate is based on said selected horizontal signal.

16. (Previously presented)The system of claim 12 further comprising a calibration module for calculating the pre-defined signal frequency band values, wherein calibration is based on the FFT algorithm.

17. (Previously presented) The system of claim 11 wherein the filtering module is a high pass filter, wherein the cut off frequency is twice a pre-defined heart rate.

18. (Previously presented) The system of claim 11 wherein at least one sensor is located beneath the lower part of the subject's body and at least one sensor is located beneath the upper part of the subject's body.

19. (Previously presented) The system of claim 12 wherein the analyzing includes identifying peak values of the filtered signal.

20. (Previously presented) The system of claim 11 wherein the horizontal signal represents the horizontal movements of the subject and the filtering and analyzing includes detection of the blood circulation.

21. (Previously presented) The system of claim 11 wherein the sensors are integrated within a single rigid housing.

22. (Currently amended) A method of non-invasive monitoring of a subject heartbeat rate, the method comprising:

sensing using a first pressure sensor located beneath the subject at a first location at the lower part of the subject's body, a first vertical pressure signal

exhibiting variations over time of vertical pressure applied by the subject on the first location;

sensing using a second pressure sensor located beneath the subject at a second location at the upper part of the subject's body, a second vertical pressure signal exhibiting variations over time of vertical pressure applied by the subject on the second location;

subtracting the first vertical pressure signal from the second vertical pressure signal thereby creating a horizontal signal exhibiting horizontal mass movements over time attributed to the subject's blood circulation;

detecting horizontal movements of the body's center of gravity based on the horizontal signal and

analyzing horizontal movements of the body's center of gravity and the horizontal signal for extracting the subject's heartbeat rate.

23. (Currently amended) A method of monitoring heartbeat rate of a lying subject, the method comprising:

providing at least two pressure sensors underneath the lying subject;

sensing, using a first pressure sensor, a first vertical pressure applied to the first pressure sensor by the lying subject and outputting a first signal indicative of the sensed first vertical pressure;

sensing, using a second pressure sensor, a second vertical pressure applied to the second pressure sensor by the lying subject and outputting a second signal indicative of the sensed second vertical pressure;

subtracting the first signal from the second signal to yield a difference signal for detecting horizontal movements of the body's center of gravity ; and

extracting the lying subject's heartbeat rate by analyzing the horizontal movements of the body's center of gravity and the difference signal,

wherein one of the first and second pressure sensors is located beneath a lower part of the subject's body and the other of the first and second pressure sensors is located beneath an upper part of the lying subject's body.